INTER-COMPARISON OF GOES-8 IMAGER AND SOUNDER SKIN TEMPERATURE RETRIEVALS

by

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A THESIS

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THESIS APPROVAL FORM

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Accepted on behalf of the Faculty of the School of Graduate Studies by the thesis committee:

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ABSTRACT

The School of Graduate Studies
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Title Inter-Comparison of GOES-8 Imager and Sounder Skin Temperature Retrievals.

Skin temperature (ST) retrievals are derived from Geostationary Operational Environmental Satellite (GOES) data. Retrievals from the GOES-8 Imager and Sounder instruments are inter-compared in order to study the effects of the spatial resolution and calibration differences. Single-pixel resolution retrievals from both instruments were found to contain significant striping errors. The 3x3-pixel averaged Imager product had relatively small striping errors and maintained more small-scale natural variations than the Sounder 3x3 product. Averaging (3x3) reduced the standard deviation of ST across a domain by approximately 0.5 K. Correlation coefficients between Imager and Sounder products were found to be greater than 0.99. Comparisons of GOES retrievals to ground truth radiometric data were difficult to interpret because of differences in footprint size and viewing angle, but did reveal correlation coefficients greater than 0.98. Comparisons of GOES-11 data to GOES-8 data revealed an average improvement factor of 1.4 in the GOES-11 striping errors for both instruments.

Abstract Approval: Committee Chair _____

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